

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

PROJECT TITLE: 325 BUILDING HAZARDOUS WASTE TREATMENT UNIT (HWTU)

Date Approved: 16-Nov-01

Emission Unit Name: EP-325-01-S

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	2 in series
	Fan	3	4 in parallel

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 Appendix A; Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	Particulates are continuously sampled and analyzed every two-weeks for gross alpha and gross beta, composited on a semi-annual basis and analyzed isotopically. Tritium samples are analyzed on a monthly basis.

Sampling Requirements: Continuous particulate using filter and tritium using silica gel.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

11/16/01 NOC Revision form submitted and approved October 16, 2001, to provide condition changes/clarifications. Conditions/Limitations issued via AIR 01-1107 on November 16, 2001.

09/15/98 Original NOC approved via AIR 98-909 dated September 15, 1998.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.10E-01 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.10E+01 mrem/year to the Maximally Exposed Individual.

3) This process is limited to:

operation of the Hazardous Waste Treatment Unit (HWTU). The HWTU consists of Rooms 520 and 528. The Shielded Analytical Laboratory (SAL) consists of Rooms 200, 201, and 203. The waste compactor is located in Room 43. In the HWTU/SAL, hazardous materials and radioactive mixed waste will be stored, dispensed, used, handled, packaged in drums, and treated using various small bench-scale treatment processes.

Approved waste treatment processes used in the HWTU/SAL include pH adjustment, ion exchange, carbon absorption, venting of gas cylinders, using polymer beads or mineral absorbents; such as clays, chemical oxidation, chemical precipitation, chemical reduction, waste concentration by evaporation, neutralization, filtration, solvent extraction, catalytic destruction, and grout encapsulation (cementation).

The other activities approved for this NOC are the following operations:

Radiochemical Processing - basic and applied research for the development of technologies that provide solutions for environmental and industrial problems. Research emphasis is the characterization of radiochemical and spent-fuel samples using analytical and metallurgical capabilities, and determining fluid and thermal behavior of waste processes and engineering systems.

Analytical Chemistry - provides quantitative gas analyses, isotopic analyses of elements, volume calibrations, and special gas standard mixtures. Typical operations include analytical weighing, sample dissolution, sample dilution, and aliquoting, digestion, distillation, titrimetric analysis, solvent extraction, and ion exchange separations.

Environmental Management Services - provides evaluation and implementation of compliant methods for waste treatment, storage and disposal. Technical staff are allowed to conduct research and development of various treatment processes and implementing the processes in waste management operations.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Am	241	5.20E-01
Am	242 m	1.42E-03
Am	243	6.70E-04
Ba	137 m	4.90E+01
Ba	140	6.00E+02
C-	14	1.00E-04
Ce	144	1.00E+02
Cm	242	2.00E-03
Cm	243	9.70E-04
Cm	244	1.03E+00
Co	60	2.80E+02
Cs	134	4.20E+01
Cs	137	6.50E+02
Eu	152	9.70E-04
Eu	154	2.00E+02
Eu	155	9.40E+02
Fe	55	5.40E+03
H-	3	1.00E+02

I-	129	4.10E-06
Kr	85	1.00E+02
La	140	1.60E+01
Mn	54	8.80E+02
Nb	95	9.60E+02
Np	237	7.00E-01
Pm	147	1.00E+03
Pr	144	1.60E+01
Pu	238	6.20E-01
Pu	239	5.20E-01
Pu	241	3.54E+00
Ra	226	1.20E+01
Ru	106	1.00E+02
Sb	125	1.20E+03
Se	79	2.84E-05
Sm	151	1.80E-02
Sr	90	1.60E+02
Ta	182	1.25E+00
Tc	99	5.86E-03
Te	125 m	4.92E-03
Th	228	1.00E+00
Th	232	1.00E-01
U-	233	2.00E-01
U-	235	4.20E+00
U-	238	4.20E+00
Zn	65	2.40E+02
Zr	95	7.00E+02

5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5) and 246-247-060(5)).

6) **This condition was obsoleted on 10/16/2001.** Hazardous materials and radioactive mixed wastes will be stored, dispensed used, handled, packaged in drums and treated, using various small bench-scale treatment processes in the HWTU/SAL.

Original condition approved via AIR 98-909 dated September 15, 1998.

Replaced by standard condition.

7) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).

8) **This condition was obsoleted on 10/16/2001.** Radioactive air emissions are limited to the concentrations listed in the NOC.

Original condition approved via AIR 98-909 dated September 15, 1998.

Replaced by standard condition.

9) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The

facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

- 10) All waste resulting from activities in the 325 Building HWTU/SAL operations must be disposed of in accordance with prescribed PNNL Procedures.
- 11) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 12) **This condition was obsoleted on 10/16/2001.** Monitoring of emission point EP-325-01-S will not change. Stack particulate emission samples will be analyzed for alpha and beta activity, and specific isotopes as required. Analytical methodology for stack samples shall comply with 40 CFR 61 Appendix B, Method 114. An isokinetic sampling probe mounted in the exhaust stack will be used to collect the particulate samples.

Original condition approved via AIR 98-909 dated September 15, 1998.

Replaced by new format of Conditions/Limitations report.

- 13) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 14) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 15) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 16) The waste compactor must remain HEPA filtered and exhausted through the main stack. It is only to be used for low-level dry materials, such as gloves, wipes, and step off pad waste as described in the NOC. Take wipes of the small compactor drawer after each compactor cycle. A log of these wipes must be maintained and available for an inspectors review.
- 17) **This condition was obsoleted on 10/16/2001.** Approved waste treatment processes used in the HWTU/SAL include pH adjustment, ion exchange, carbon absorption, using polymer beads or mineral absorbents; such as clays, chemical oxidation, chemical precipitation, chemical reduction, waste concentration by evaporation, neutralization, filtration, solvent extraction, catalytic destruction, and grout encapsulation (cementation) as described in the NOC.

Original condition approved via AIR 98-909 dated September 15, 1998.

Condition changed to reflect new standard condition wording via AIR 01-1107 dated November 16, 2001.

- 18) **This condition was obsoleted on 10/16/2001.** Activities of the Radiochemical Processing Analytical Chemistry and Environmental Management groups in the 325 Building are limited to those described in the NOC.

Original condition approved via AIR 98-909 dated September 15, 1998.

Obsoleted by NOC Application/Permit Revision form approved November 16, 2001, via AIR 01-1107.

- 19) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).

- 20) Equipment and procedures for continuous monitoring shall conform to ANSI N13.1. The specific design must be approved by the department prior to installation. Any deviation from ANSI N13.1 must be approved by the department prior to construction (WAC 246-247-075(2)).
- 1) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 22) **This condition was obsoleted on 10/16/2001.** The additional 325 Building emissions must be as a result of waste treatment activities in the waste compactor in Room 43, Hazardous Waste Treatment Unit (HWTU) in Rooms 520 and 528, and the Shielded Analytical Laboratory (SAL) in Rooms 200, 201, and 203 (Hot Cells) of the 325 Building as described in the NOC.
Original condition approved via AIR 98-909 dated September 15, 1998.
Replaced by standard condition.
- 23) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 24) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 25) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 26) **This condition was obsoleted on 10/16/2001.** This approval, with its Conditions and Limitations, constitutes and amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
Original condition approved via AIR 98-909 dated September 15, 1998.
Condition obsoleted by issuance of the Hanford Air Operating Permit.
- 27) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 28) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 29) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction

or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

- 30) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).